

Descriptions of new species of North American FORMICIDÆ.

BY S. B. BUCKLEY.

About five years ago, while we were engaged in the Geological Survey of Texas, our attention was frequently drawn to the Ants and their wonderful works, which, in Texas, evince so much intelligence, industry and perseverance, as to attract the attention of the most ordinary observer. Finally, although pressed with other duties, we gave a large portion of our leisure to collecting them and observing their habits, which we have continued to do up to the present time, with much pleasure and satisfaction.

The following described species were collected by us, unless otherwise stated.

To Mr. Edward Norton, of Connecticut, the well-known Entomologist, who has made the Hymenoptera a special study, we are indebted for many European species (which are useful for comparison,) and also for many new American species, as will be seen in the following pages.

We are also under obligations to Dr. J. L. LeConte of Philadelphia, for access to his valuable entomological library, and for the loan of a French Edition of Latreille's *Histoire Naturelle des Fourmis*, which contains figures of 75 species of Ants. This work, although old, is still of great service in the study of this Family, because subsequent authors often refer to its figures.

The large libraries of the Academy of Natural Sciences of Philadelphia, and of the Entomological Society of the same city, have afforded the greatest aid; for without their assistance, the following descriptions could not have been written. Most of what has been published on Ants, is scattered through the publications of learned Societies, which are found in but few of the libraries in our country.

Dr Gideon Linecum, Sen'r, of Washington Co., Texas, has collected 34 species of Ants in his neighborhood, and although we have also found most of them, still the Doctor has given valuable assistance.

Mr. Frederick Smith, in his Catalogue of the Hymenoptera in the British Museum, states that there are 490 species of Ants on record.

Mr. Bates, who has collected for some years in Brazil, thinks the number of species in the Valley of the Amazon, cannot be less than 400.

There are about 100 species of Ants in Europe. Nylander enumerates 68 species in France and Algiers. There are probably at

least 200 species within the United States, a large portion of which still remain undescribed. We think Texas alone contains more than 100 species.

1. *Formica Nova Anglæ*, n. sp.

Female. Length 0.32 inch.—Wings extend about a line beyond the abdomen, and have one marginal, two sub-marginal and one discoidal cells; head subquadrate, slightly rounded above, occiput emarginate, with its posterior angles rounded; eyes rather small, circular, placed near the sides and near the occiput; antennæ rather short, slightly clavate, inserted a little in front of the vertex; mandibles enlarged in front, curved inwards, toothed, apical tooth long and acute, inner margins tinged with black; clypeus subcarinated, under surface of the head rounded, with a very slight, longitudinal depression; prothorax nearly equal in width to the head, rounded, smooth above, somewhat compressed at the sides and divided by a narrowed band, slightly depressed into an upper and lower portion; mesothorax short, not depressed, its upper surface sub-piceous; metathorax narrowed posteriorly, descending gradually to the pedicle; scale large, slightly inclined forwards and wedge-shaped; abdomen sub-truncate in front, round-ovate, subobtuse; legs long and slender; whole ant smooth and shining; posterior part of the abdomen sprinkled with a few hairs.

Worker. Length 0.22 inch.—Head wider than the prothorax, and but slightly emarginate; mesothorax depressed and strangulated; metathorax raised, narrowed upwards, and rounded above; otherwise like the female.

Hab.—Maine, (Norton).

2. *Formica Nortonii*, n. sp.

Worker. Length 0.23 inch.—Upper surface of thorax and abdomen and the back part of the head, dark reddish-brown, the rest yellowish-red or pale yellow; head subtriangular, round above, not emarginate, posterior angles rounded; eyes large, subelliptical, lateral, placed on the upper surface, a little behind the middle; mandibles rounded at base, then subtriangular and many toothed, apical tooth long, curved in and acute; antennæ inserted near the base of the clypeus, subclavate, long, filiform; clypeus slightly carinated; under surface of the head not channelled, prothorax little narrower than the head, round in front, at top and sides, and widest posteriorly; mesothorax slightly depressed in front, somewhat strangulated at its junction with the metathorax, and narrower than the pro- or metathorax; metathorax slightly compressed and inclined gradually to the pedicle, which is inserted

in the anterior base of the abdomen; scale large, wedge-shaped, vertical; abdomen broad ovate; legs long, slender; upper surface of head and abdomen thinly sprinkled with short, white hairs.

Female. Length 0.30 inch.—Head ovate, small, three-fourths as wide as the prothorax; prothorax compressed at the sides, rounded in front and somewhat flattened above; mesothorax convex on the upper surface, which is as high as the prothorax and nearly as wide; metathorax compressed, narrowed black, sloping gradually to the pedicle; wings with one marginal, two submarginal and no discoidal cells, extending 0.10 inch beyond the abdomen; otherwise like the worker.

Hab.—Connecticut, (Norton).

3. *Formica americana*, n. sp.

Female. Length 0.29 inch.—Wings extending 0.08 beyond the abdomen, with one marginal and two submarginal cells; black; mouth, trochanters and tibiæ, dark reddish-brown; tarsi reddish-yellow; head narrower than the prothorax, ovate, rounded above, at the sides and occiput; eyes large, prominent, elliptical, placed about midway on the sides; antennæ long, filiform and not enlarged towards their apical joints, inserted at the base of the clypeus; ocelli 3, placed at top of occiput; mandibles widened anteriorly and toothed; under surface of the head not channelled; prothorax elevated, round above in front, and somewhat compressed at the sides; mesothorax a little higher than the prothorax, rounded above, and narrowed behind; metathorax depressed and but a little narrower than the prothorax, subtruncate; scale large, wedge-shaped and vertical; abdomen subtruncate in front, ovate and subacute, the last segment thickly sprinkled with hairs; legs slender.

Worker. Length 0.20.—Head and abdomen black; thorax and legs dark reddish-brown, with lighter shades of yellowish-red; smooth and glossy throughout; prothorax about one-third narrower than the head; scale small, thin, wedge-shaped; the whole thorax compressed at the sides and narrowed behind, its divisions not strongly marked; abdomen ovate, the margins of the segments hyaline; otherwise like the female.

Hab.—Connecticut, (Norton).

4. *Formica Connecticutensis*, n. sp.

Worker. Length 0.22 inch.—Black; head ovate, rounded above, at sides and posteriorly; eyes large, circular, sublateral and near the posterior angles; antennæ inserted near the base of the clypeus, long, filiform, and very little enlarged towards their apical joints; mandibles

subtriangular, finely toothed on their inner margins; prothorax one-third narrower than the head, round above, in front, at the sides, and widest in the middle; mesothorax compressed, inclined posteriorly, and strangulated at its junction with the metathorax; metathorax raised, compressed, widened posteriorly, subtruncate; pedicle rather long; scale vertical, thin, wedge-shaped; abdomen round-ovate, and thinly sprinkled with short, white hairs; legs long, slender.

Female. Length 0.43 inch.—Tibiæ, tarsi and part of the trochanters, reddish-yellow, the rest black; head narrower than the prothorax; mesothorax raised, higher than the prothorax and rounded above; abdomen oblong-ovate; wings extending 0.12 inch beyond the abdomen, with one marginal, two submarginal and one discoidal cells; otherwise like the worker.

Hab.—Connecticut, (Norton). We have also found this species in the vicinity of Washington, D. C., and near Naples, in Western New York.

For the convenience of American Students, we append the following description of *Formica Pennsylvanica* of DeGeer, which is figured and partly described by Latrielle.

Formica Pennsylvanica, DeGeer.

Female. Length 0.68 inch.—Wings with one marginal and two submarginal cells, no discoidal cell; black; under surface of the thorax and the abdomen, and legs spotted more or less with reddish-brown, the black predominating; head large, broad ovate, rounded at the sides and posterior angles; occiput not emarginate; eyes circular, not prominent, placed behind the middle near the posterior angles; ocelli none; antennæ inserted a little back of the base of the clypeus, filiform, very slightly, if any, enlarged towards their apical joints; thorax a little narrower than the head, rounded above, at the sides and in front, where there is a narrow, impressed band which extends around to the sides, and is tinged with reddish-brown; mesothorax not depressed, rounded above and narrower than the prothorax, with a narrow, slightly depressed band between it and the metathorax; metathorax short, depressed, narrower than the pro- or mesothorax, and steep to the pedicle; scale thin, wedge-shaped, vertical; abdomen oblong-ovate; margins of the segments with narrow hyaline bands, and are thickly fringed with hairs.

Worker. Length 0.39 inch.—Thorax one-third narrower than the head; whole thorax narrowed behind, with no depression of its divisions; metathorax slopes gradually to the pedicle; otherwise like the female.

This is the common wood ant, which extends from New England to Texas. It is quite variable in size. Our measurements are from the largest specimens.

5. *Formica gnava*, n. sp.

Female. Length 0.35 inch.—Black or brownish-black, margins of the segments of the abdomen, and also the legs, pale yellow or hyaline; head small, triangular, depressed and flattened above; eyes very large, prominent, elliptical, lateral, and behind the middle of the head; ocelli 3, prominent and at top of the occiput; clypeus raised and oval; prothorax large, wider than head, rounded above, subcompressed at the sides, its posterior part widest; mesothorax small, raised as high as the prothorax, rounded above, and with a slight depression between it and the metathorax, which is short, and subtruncate; scale wedge-shaped, vertical; abdomen large, broad ovate; wings extending beyond the abdomen, with one marginal, two submarginal, and one discoidal cells. Otherwise like the worker.

Male. Length 0.29 inch.—Thorax but little wider than the head; abdomen ovate, short. Otherwise like the female.

Worker. Length 0.18 inch.—Smooth throughout; head, thorax, and legs yellowish-red; abdomen black, or piceous; when first caught or seen in their cells, the whole seems to be of a bronze color; head ovate, rounded above, below and behind, with a slight depression at the base of the clypeus, which is subcarinated; antennæ long, filiform and slightly enlarged towards their apical joints; mandibles large, short, strangulated in the middle, then curved inwards, and widened, 7-toothed; eyes large, subelliptical, lateral, and a little behind the middle of the head, near the upper surface; prothorax little more than half the width of the head, rounded above and enlarged anteriorly; mesothorax depressed, inclined back, with a slight strangulation between it and metathorax; metathorax large, widest in the middle; scale large, wedge-shaped, and slightly inclined forwards; abdomen ovate; legs long.

Hab.—Central Texas; Washington, D. C.; Naples, New York; Connecticut, (Norton).

Very active and brave; bites sharply, and emits a strong odor of formic acid. Has cells in the ground, sometimes to the depth of two or more feet, forming small mounds with the excavated earth. Is solitary in foraging, scattered here and there over the surface of the ground.

6. *Formica occidentalis*, n. sp.

Female. Length 0.32 inch.—Wings extending 0.08 inch beyond the abdomen, with one marginal, two submarginal and one discoidal cells; upper surface of occiput, thorax and abdomen black or piceous, the rest reddish-brown, spotted with piceous; head subovate, the sides slightly rounded, its upper surface but little oval, and its posterior angles a little rounded, the occiput nearly straight between them; antennæ short, the club and flagellum of nearly equal length, clavate, joints very short; mandibles large, curved inwards and downwards, 5-toothed, apical tooth long, acute; eyes small, circular, sublateral, and a little back of midway of the head, which is a little wider than the prothorax and not sinuate below; prothorax subcompressed at the sides, rounded above, widest behind; mesothorax not depressed, equal in width to the prothorax, rounded somewhat at the sides; metathorax narrowed behind, subtruncate; scale large, wedge-shaped, vertical; abdomen ovate, oblong, subtruncate in front, obtuse behind; legs short, slender; upper surface of head, thorax, scale, pedicle and last segment of the abdomen, thickly sprinkled with hairs.

Worker. Length 0.11 inch.—Upper surface of head, thorax and abdomen, reddish-yellow or pale yellow, the rest pale yellow; head broad, ovate, rounded above, at sides and posterior angles; prothorax about one-third narrower than the head, round above, in front, at sides, widest in the middle; mesothorax narrower than the pro- or metathorax, and strongly depressed at its junction with the metathorax; metathorax nearly as wide as the prothorax; rounded above and at its sides, subtruncate; otherwise like the female.

Dwells beneath stones, in the ground, on hills at Naples, in Western New York; we have also received it from Mr. Norton of Connecticut.

7. *Formica monticola*, n. sp.

Worker. Length 0.10 inch.—Upper surface of head, thorax and abdomen, reddish-brown; legs and under surface honey-yellow; head subovate, rounded above and behind, not emarginate, a shallow sinus below; antennæ filiform, a little enlarged towards their apical joints; eyes black, circular, lateral, and about midway of the head; mandibles subtriangular, curved inwards and downwards, toothed; prothorax rounded above, at the sides, in front, widest in the middle; mesothorax narrower than the pro- or metathorax, raised and rounded in the middle, substrangulated behind; metathorax about equal in width to the prothorax, somewhat rounded above, subtruncate behind; pe-

dicle short and inserted in the base of the abdomen a little in front of the centre; scale large, vertical, wedge-shaped; legs long, slender; abdomen broad-ovate, upper surface of the head and posterior part of the abdomen sprinkled with short hairs.

Female. Length 0.30 inch.—Wings extend beyond the abdomen 0.11 inch, with one marginal, two submarginal, and one discoidal cells; dark-brown or piceous above; legs and under surface pale yellow or yellowish-brown; head not channelled below; prothorax about one-fourth wider than the head; mesothorax not depressed, rounded above; metathorax short, depressed, subtruncate; scale vertical and wedge-shaped, and concealed between the thorax and abdomen; abdomen large, long, ovate; legs short and slender; whole ant smooth, not hairy. Otherwise like the worker.

Male. Length 0.11 inch.—Head very small; eyes large; prothorax one-half wider than the head; abdomen small, subtruncate in front, ovate, acute. Otherwise like the female.

Dwells in the ground, beneath stones, on the hills near Naples, in Western New York. Winged in May.

8. *Formica gracilis*, n. sp.

Female. Length 0.18 inch.—Black or piceous; legs pale yellow or piceous; wings projecting nearly a line beyond the abdomen, with one marginal, two submarginal and one discoidal cells; head subtriangular, not emarginate, posterior angles rounded above and at the sides; antennæ in a slight depression at the base of the clypeus, rather short, and but little enlarged towards their apical joints; eyes large, prominent, circular, lateral, placed near the top and a little in front of the middle; mandibles small, curved inwards and downwards, and acute; prothorax about equal in width to the head, rounded above, in front, and at the sides, and widest posteriorly; scale small, partly concealed by the abdomen; pedicle short, inserted in the base of the anterior portion of the abdomen; abdomen oblong, ovate, subobtusate; legs short, slender; whole ant smooth, shining, and of slender form.

Worker. Length 0.12 inch.—Head wider than the prothorax; prothorax rounded above, in the front, and at the sides, widest in the middle; divisions of the thorax strongly marked; mesothorax slightly depressed, compressed and narrowed behind; metathorax small, compressed; abdomen broad, ovate, obtuse. Otherwise like the female.

Dwells in the ground beneath stones, on the hills, at Naples, New York. Winged femaels caught in May.

9. *Formica parva*, n. sp.

Worker. Length 0.10 inch.—Black; legs piceous; smooth throughout and of slender form; head ovate, rounded above, at the sides and behind, not emarginate; eyes large, elliptical, in front of the middle near the sides; antennæ long, subclavate, inserted at the base of the clypeus; mandibles small, curved in, acute; head broad, sinuate below; prothorax narrower than the head, somewhat flattened above, rounded at the sides, widest in the middle; mesothorax somewhat depressed, narrowed behind; metathorax compressed; scale small, nodose; pedicle short, and inserted in the anterior part of the base of the abdomen; abdomen broad, ovate, acute.

Hab.—Near Washington, D. C., beneath stones.

10. *Formica atra*, n. sp.

Worker. Length 0.19 inch.—Black; trochanters, tibiæ and tarsi subhyaline; head subovate, rounded above, at the sides, and at the posterior angles; occiput not emarginate, front of the head of about the same width as the back; antennæ inserted at the base of the clypeus, long, filiform, and not clavate; eyes small, circular, lateral, and a little back from the middle of the head; mandibles small, curved inwards, and toothed on their inner margins; head not sinuate below; prothorax but little narrower than the head, rounded above, in front and at the sides, widest a little in front of its middle; meso- and metathorax compressed and narrowed back in the same plane; metathorax subtruncate; scale narrow transversely, wedge-shaped; pedicle inserted in the anterior part of the base of the abdomen; abdomen obovate, the first segment round, narrow in front, widened behind; legs long, slender; whole ant of slender, elongated form, smooth and shining; the upper margins of the segments of the abdomen thinly sprinkled with hairs.

Hab.—On trees in the environs of Washington, D. C.

11. *Formica Virginiana*, n. sp.

Worker. Length 0.20 inch.—Reddish-yellow; head ovate, rounded above, at the sides and behind; eyes large, black, circular, lateral, near the top about midway of the head; antennæ inserted at base of the clypeus, long, clavate; mandibles large, subtriangular, curved in at the apex, 5-toothed, apical tooth long, acute; clypeus somewhat depressed, round, smooth, under surface of the head not channelled; prothorax narrower than the head, rounded above, in front, at the sides, widest in the middle; mesothorax narrower than the pro- or metathorax, compressed, and depressed back to the metathorax, where

there is a slight strangulation; metathorax raised, widened, descends gradually to the pedicle, which is inserted in the front base of the abdomen; scale large, vertical, wedge-shaped; abdomen truncate in front, broad ovate, obtuse, thinly sprinkled with hairs; legs very long, slender; whole ant smooth and shining.

Hab.—On trees in the Capitol Park at Washington, D. C. Not common.

12. *Formica arenicola*, n. sp.

Worker. Length 0.13 inch.—Upper surface of head, thorax and abdomen black or piceous, spotted with pale yellow beneath; legs, antennæ and mandibles pale yellow; head ovate, round above; occiput not emarginate; antennæ inserted at the base of the clypeus, long, clavate; eyes large, black, elliptical, in the upper surface of the sides of the head, about midway; mandibles triangular, acute and finely toothed on their inner margins; under surface of the head not sinuate; prothorax about one-half the width of the head, round above and at sides, widest in front; mesothorax compressed and not depressed; metathorax narrowed behind and inclined gradually to the pedicle; divisions of the thorax not strongly marked; pedicle short and inserted in the base of the abdomen a little in front of the middle; scale large, wedge-shaped, inclined forward to the metathorax; abdomen subtriangular, with a broad base in front; whole ant smooth and shining, not hairy.

Hab.—Found in sandy soil near Washington, D. C. Has cells but a few inches deep.

13. *Formica politurata*, n. sp.

Worker. Length 0.16 inch.—Mouth, antennæ, thorax, legs, pedicle and scale, yellowish-brown, with piceous spots; the rest black; the whole surface smooth and shining, with a few short hairs on the abdomen and upper surface of the head; head ovate, rounded above, at sides and at posterior angles; eyes circular on the upper surface, sublateral, large, and placed about midway of the head; antennæ inserted at the base of the clypeus, slightly clavate; mandibles small, short, curved in, toothed and acute; prothorax one-fourth narrower than the head, rounded at its sides and somewhat flattened above, widest in the middle; mesothorax not depressed, slightly compressed, higher and narrower than the prothorax; metathorax still narrower, sloping gradually to the pedicle; scale vertical, thin, wedge-shaped; abdomen ovate, obtuse.

Hab.—Michigan, (Norton).

14. *Formica septentrionale*, n. sp.

Worker. Length 0.25 inch.—Head and abdomen black; thorax, legs and seale reddish-brown, with piceous spots; head broad, oval or subquadrate, the front, back of the mandibles, as broad as the occiput, the sides, posterior angles and upper surface rounded, under surface sinuate; antennæ long, filiform, and but slightly enlarged towards the apical joints; eyes lateral, circular, and a little back of the middle; mandibles small, curved inwards, acute; prothorax one-third narrower than the head, round above and in front, slightly compressed at the sides, widest in the middle; mesothorax not depressed, slightly rounded above, compressed at sides, narrowed behind, having a triangular outline, with its apex back seen from above; metathorax narrow, short, compressed, subtruncate; seale thin, wedge-shaped, vertical; abdomen round-ovate; margins of the segments hyaline; whole ant smooth, without hairs, and shining.

Female. Length 0.30 inch.—Wings extend 0.05 inch beyond the abdomen, with one marginal and two submarginal cells, discoidal cell obsolete; a very few scattering hairs on the abdomen; otherwise like the worker.

Hab.—Michigan and Illinois, (Norton).

15. *Formica Floridana*, n. sp.

Worker. Length 0.28 inch.—Abdomen black, the rest yellowish-red; head subcordate, rounded above, occiput emarginate, with the posterior angles rounded; two short channels a little diverging extend back from the clypeus to the vertex; antennæ inserted a little in front of the vertex; long, filiform, and but little enlarged towards the apical joint; eyes of medium size, circular, placed on top near the sides and little back of the middle, prominent; mandibles reddish-brown, curved inwards and toothed, apical tooth long, acute; under surface of the head sinuate; prothorax narrower than the head, rounded above, in front and at the sides, widest near the front; mesothorax compressed, narrowed backwards, not depressed; metathorax narrowed behind, and descends gradually to the pedicel; seale large, vertical and wedge-shaped; abdomen broad, ovate, subacute, margins of its segments slightly hyaline; legs long, slender; thorax throughout rather thickly sprinkled with long gray hairs.

Hab.—Florida, (Norton).

16. *Formica Tejonica*, n. sp.

Male. Length 0.39 inch.—Black; tarsi dark reddish-brown; head small ovate, rounded above, at sides and behind; eyes large, promi-

ment, sublateral, and placed about midway of the head on the upper surface; antennæ inserted in front a little back of the base of the clypeus; mandibles slender, widened anteriorly, toothed on the inner margins; ocelli prominent and on top of the occiput; under surface of the head somewhat flattened, not sinuate; prothorax one-fourth wider than the head, rounded above, at the sides and in front, widest in the middle; mesothorax not depressed, about as wide as the prothorax and rounded at the sides; metathorax a little depressed and a little narrower than the mesothorax, subtruncate; scale incrassate, thick, wedge-shaped; abdomen truncate in front, oblong ovate, acute; legs slender; upper surface of the head, back part of the thorax and abdomen thinly sprinkled with hairs; whole surface smooth and shining; wings extend 0.12 inch beyond the abdomen, with one marginal and two submarginal cells, no discoidal cell.

Hab.—Fort Tejon, California, (Norton).

17. *Formica tenuissima*, n. sp.

Worker. Length 0.09 inch.—Reddish-yellow; legs pale yellow; head triangular, rounded above and behind, and slightly so on the sides; eyes large, circular, lateral, and placed in front of the middle; antennæ long, filiform and not clavate; mandibles small, slender, curved inwards and downwards, acute; under surface of head longitudinally sinuate; prothorax narrower than the head, round and smooth above and in front, where it is widest, a slight depression between the meso- and metathorax; metathorax nearly as high as the prothorax, but narrower; pedicel short; scale large, erect, wedge-shaped, and slightly inclined forwards; abdomen ovate, obtuse; legs long, slender; whole ant smooth, with a few scattering hairs on its upper surface.

Hab.—Central Texas, in ground beneath stones. Rare.

18. *Formica perminuta*, n. sp.

Worker. Length 0.08 inch—Yellow or reddish-yellow; legs and abdomen yellowish-brown; head subtriangular, rounded above, occiput emarginate, the posterior angles slightly rounded; eyes large, circular, in front of the middle, and on top of the head near the lateral margins; mandibles slender, somewhat projected in front, curved near the apex, with five minute teeth; club of the antennæ equal in length to the flagellum, which is short-jointed; prothorax narrower than the head, smooth and rounded in front, above, and largest about one-third distance back to the mesothorax, which is depressed or slightly strangulated at its junction with the metathorax; metathorax round and smooth above, slopes gradually to the pedicel, which is short and in-

serted in the base of the abdomen a little in front of the middle; scale small, wedge-shaped and inclined towards the front; abdomen ovate; upper surface of the thorax and abdomen sprinkled with hairs.

Hab.—Central Texas, in the ground near the surface.

19. *Formica picea*, n. sp.

Worker. Length 0.06 inch.—Head and abdomen pitchy-black, the rest smoky-yellow; head quadrangular, seen from above, its sides nearly straight; posterior angles slightly rounded and also its posterior margin, which is also nearly straight; antennæ long, clavate, inserted near the base of the clypeus; clypeus oval, with a small depression at its base; eyes large, subcircular, prominent, and placed in the upper surface of the head near the sides, about midway; mandibles small, subtriangular and curved inwards; prothorax narrower than the head, rounded above, in front and at the sides, largest posteriorly; mesothorax narrower than either the pro- or metathorax and slightly depressed; metathorax raised, rounded and smooth above, subcompressed at its sides, subtruncate; pedicle short, and inserted in the base of the abdomen a little in front of the middle; scale large, sub-wedge-shaped, vertical; abdomen broad ovate, subobtuse, its upper surface thickly sprinkled with hairs; legs long, slender.

Active; dwells beneath rocks in the vicinity of Austin, Texas. Rare.

20. *Formica Lincecumii*, n. sp.

Female. Length 0.35 inch.—Black; wings of a reddish-brown color, extending 0.12 inch beyond the abdomen, with one marginal, two submarginal and one discoidal cell; head a little narrower than the prothorax, ovate, round at occiput and sides; antennæ inserted at base of the clypeus, long, filiform, and slightly enlarged towards their apical joints; eyes subelliptical, prominent, and placed near the top of the posterior angles; a small channel extends from the base of the clypeus to the occiput; mandibles subtriangular and toothed on their inner margins; prothorax flattened at its sides, but little rounded at the top, a broad band, thickly sprinkled with short white hairs, in front and extending around to the sides; mesothorax not depressed, as wide as the prothorax; metathorax depressed, short and subtruncate; pedicle short; scale thin, wedge-shaped, vertical; abdomen large, round ovate, obtuse, and thickly sprinkled with hairs posteriorly; legs short, slender.

Worker. Length 0.20 inch.—Under side of thorax and legs spotted with dark reddish-brown, black predominating; under surface of head smooth and rounded; head one-fourth wider than the prothorax;

prothorax round above, in front and at the sides, widest in the middle; mesothorax narrowed behind, a small strangulation between it and the metathorax; metathorax raised, widened behind, truncate; abdomen small ovate; legs long, slender; otherwise like the female.

Male. Length 0.34 inch.—Trochanters, tibiæ and tarsi pale yellow; head very small and one-third narrower than prothorax; eyes very prominent, large, lateral, and gray; abdomen oblong-ovate; the rest like the female.

Dwells in trees. Texas.

21. *Formica festinata*. n. sp.

Female. Length 0.50 inch.—Honey-yellow, with dark brown on the abdomen, thorax and head; wings projecting but little beyond the abdomen, with one marginal and two submarginal cells; head oblong-subtriangular, rounded and smooth above, emarginate behind, posterior angles rounded; eyes black, large, prominent, placed on the sides of the head near the anterior portion of the occiput; ocelli situated back of the vertex on the upper part of the occiput; antennæ long, filiform; mandibles brownish-black, short, large, curved inwards, having each seven blunt teeth on the inner margins; thorax about equal in width to the head, its sides compressed and narrowed posteriorly; posterior margin of the prothorax and entire upper margin of the mesothorax, blackish-brown, the margin being slightly raised, metathorax lower, oval, smooth and rounded; pedicel short, scale large, erect and somewhat compressed; abdomen oblong-ovate, with a few scattering hairs on the margins of the segments which are brown or brownish-black; legs long, slender. The entire insect is smooth and shining.

Worker. Length 0.28 inch.—Honey-yellow, or colored like the female; ocelli none; head wider than the thorax; thorax smooth, with the divisions well marked; abdomen ovate, pointed; the remainder like the female.

The workers of this species vary in size and somewhat in color, the largest being often tinged with brownish-black like the females. Those tinged are probably the oldest, and this may be the cause of the difference. The length given is that of one of the smallest. Both sizes work in common. They are very active, travelling beneath rocks or sticks where they have cells and galleries in the earth to the depth of twelve or eighteen inches. They are not war-like, and rarely bite when caught, nor are they often seen in the open air, hence they probably seek food by night.

Common in Central Texas. Winged females caught in September.

22. *Formica insana*, n. sp. ("Crazy Ant.")

Worker. Length 0.14 inch.—Color black or brownish-black, smooth and shining throughout; head sub-quadrate, the lateral margins slightly curved inwards; below oval and rounded above; eyes large, sub-elliptical, and placed on the anterior portion of the head near its lateral margins; antennæ long, filiform; mandibles large, curved inwards, the truncated apical ends sharply toothed; head sub-channelled beneath, with the anterior and posterior parts deeply depressed; prothorax about half the width of the head, rounded above; mesothorax somewhat depressed; metathorax has a rudimentary spine or sharp protuberance on its upper posterior surface, pedicle short, inserted near the base of the anterior part of the abdomen; scale small, wedge-shaped, and inclined forwards; abdomen broad-ovate, subacute; legs small, slender, and rather short.

Female. Length 0.20 inch.—Head small, narrower than the thorax; abdomen broad, oblong and ovate; color black-bronze, with the margins of the segments of the abdomen hyaline; thorax raised above the head; wings not seen; the remainder like the worker.

Dwells in the ground but a few inches deep, having numerous holes scattered over a large surface of fifty or more feet in diameter. It goes now here and now there, without order, from one abode to another, sometimes moving the larvæ from one place to another; large colonies dwelling in common. It is very active and war-like, can conquer most other ants, boldly seizing the larger species by the legs. If a large ant is so unfortunate as to run among the "crazy ants," he hastens to escape, but rarely does so without being severely bitten.

Common in Central Texas.

23. *Formica masonia*, n. sp.

Worker. Length 0.11 inch.—Color brownish-black, paler beneath; head cordate, with its upper surface subrotund; ocelli absent; eyes large, prominent and lateral, placed in the anterior portion of the head; occiput emarginate, with its posterior angles rounded; antennæ long, filiform; mandibles small and of nearly uniform width, curved inwards, with two teeth at the apex; under surface of head round, with a slight depression at the mentum and the occiput; prothorax about one-third narrower than the head, compressed and narrowed posteriorly, rounded and smooth above; mesothorax slightly depressed; pedicle short and inserted in the anterior portion of the base of the abdomen; scale small, subnodose; legs long, slender; whole ant smooth and glossy.

Female unknown.



Dwells in the ground near the surface, in the vicinity of Fort Mason, in Western Texas.

24. *Formica saxicola*, n. sp.

Female. Length 0.17 inch.—Head and abdomen subpiceous or brownish-black; thorax and legs reddish-brown; head small, triangular, about half the width of the thorax, rounded and smooth above; ocelli placed near the vertex; eyes large, placed about midway of the upper portion of the sides of the head; antennæ filiform and slightly enlarged towards the apical joint; mandibles small, flattened and narrower in the middle portion, curved inwards, and with four small teeth on the inner apical margin; thorax large, raised above the head, with the principal divisions slightly marked; pedicle short; scale small, erect and compressed; abdomen large, oblong-ovate; legs slender and rather short; whole ant smooth and shining; wings not seen.

Worker. Length 0.11 inch.—Color yellowish-brown; head triangular, wider than the thorax; eyes small; ocelli absent; mandibles small; thorax with the divisions strongly marked; mesothorax somewhat depressed; abdomen ovate; legs long and slender; legs and under surface of the whole body honey-yellow; otherwise like the female.

Hab.—Beneath rocks in Buchanan County in Northern Texas.

25. *Formica discolor*, n. sp.

Female. Length 0.30 inch.—Anterior wings extending about 0.10 inch beyond the abdomen, with one marginal and two submarginal cells, discoidal cells obsolete; head, thorax and legs reddish-brown, excepting the upper portion of the mesothorax which is black; abdomen black; eyes small, circular, black, lateral, placed near the upper surface, a little behind the middle part of the head; antennæ inserted in front, filiform; mandibles widened and curved inwards anteriorly, with their inner apical margins 5-toothed; head broader than the thorax, subquadrate, rounded above, a deep cavity beneath the occiput; prothorax raised above the head, rounded above; meso- and metathorax small, with the divisions well marked; pedicle short; scale large, vertical and compressed, with edges somewhat sharp; abdomen oblong-ovate, subobtuse, with a few scattering short hairs in the margins of the posterior segments; legs somewhat short and slender; tibiæ and tarsi of a darker shade than the coxæ and trochanters.

Worker. Length 0.26 inch.—Head thorax and legs reddish-brown; abdomen ovate, black; mandibles brownish-black; thorax compressed and narrowed posteriorly; prothorax about half the width of the head;

epistoma and posterior part of the abdomen somewhat hairy, the rest smooth and shining; legs long and slender; otherwise like the female.

Winged females caught about the middle of April. Dwell beneath stones and logs, having cells a few inches beneath the surface of the ground.

Hab.—Central Texas, where it is not very common, being rarely seen in the open air.

26. *Formica San Sabeana*, n. sp.

Female. Length 0.62 inch.—Wings extend but a little beyond the abdomen, and having one marginal and two submarginal cells, discoidal cells absent. Color: head and thorax black; abdomen yellowish-brown, the upper surface of the three last segments brownish-black; legs chestnut or yellowish-red; head subtriangular, depressed in front, vertex slightly convex; occiput emarginate, with the posterior angles rounded; eyes small, circular, and placed a little behind the middle of head on the upper margins of its sides; mandibles flattened, curved inwards, widened anteriorly, each with five teeth on their apical margins; antennæ filiform, and not enlarged towards the apical joints; prothorax large and of nearly equal width to the head, rounded above and raised higher than the mesothorax, a small depression between the meso- and metathorax; pedicle short; scale large, vertical and wedge-shaped; abdomen oblong-ovate; legs slender and short; whole ant smooth and shining, sprinkled with a very few short white hairs.

Male. Length 0.32 inch.—Abdomen very slender and oblong-ovate; color black, segments of abdomen hyaline; legs dark-brown or brownish-black; otherwise like the female. Caught in the winged state about the 1st of October.

Worker. Length 0.46 inch. Head black or brownish-black, triangular, about twice the width of the thorax; thorax yellowish-brown or piceous on its upper surface, its divisions strongly marked; otherwise like the female.

Found in an old decaying stump, in which it had many cells with intervening passages. Is very quick in its movements. Habits little known.

Hab.—Burnet and San Saba Counties, Texas. Rare.

27. *Formica fœtida*, n. sp.

Female. Length 0.19 inch.—Smooth throughout; honey-yellow, with brownish bands on the segments of the abdomen; head small, subtriangular, curved above and a little rounded beneath, concave be-

low the occiput which is slightly emarginate; eyes large, lateral, and placed in the anterior portion of the head; antennæ long, filiform; mandibles small, subtriangular, curved, and inner margins toothed near the apex; thorax wider than the head, compressed and narrowed posteriorly, divisions well marked, rounded and smooth above; pedicel short; scale small, vertical or slightly inclined forwards and obtuse; abdomen oblong-ovate, with the upper portion of the segments banded with reddish-brown, margins hyaline; last segment somewhat hairy; antennæ, upper part of the head and thorax sprinkled with short grey hairs; wings not seen.

Worker. Length 0.07 inch.—Head and thorax reddish-brown or yellowish-brown; abdomen honey-yellow, smooth throughout; head wider than the thorax; pedicel very short; scale small, and near the abdomen; eyes small; abdomen elliptical; the rest like the female.

Very active in its movements. Lives in the ground beneath stones, or excavates holes in open spaces, throwing its dirt crater-form; has many homes in the vicinity of each other. Lives principally on vegetable food. I have seen some seeds of weeds and grass in its cells beneath rocks, late in autumn. It is seen in the open air at all times during the day; has regular paths in the vicinity of its dwellings, along which it goes in single file, or in ranks; it is also seen frequently going up and down trees. It is not warlike, and is seen most in the vicinity of water near a river or stream. When touched it emits a very disagreeable odor, somewhat resembling rotten cocoanut, and very different from the formic-acid smell of some other species. I have often seen ten or twelve wingless females in one family beneath an upturned rock, and there were probably as many more in the cells below. These females were without any body-guard, nor does one seem to be needed when they are among friends. I have never seen the female ants receive any special attention from the workers, except when families are migrating or in times of danger; if a female becomes maimed then the workers rush to her assistance.

Common in Central Texas.

28. *Formica (Tapinoma) terricola*. n. sp.

Female. Length 0.27 inch.—Wings extending but little beyond the abdomen, with one marginal and two submarginal cells, discoidal cells obsolete; color black or brownish-black; under surface of head, thorax and abdomen and also the legs piceous, with lighter shades of yellowish-white; head small, triangular; eyes small, lateral, placed about midway of the upper surface of the head; mandibles small, curv-

ed inwards, and with three small teeth near the apex, which are not seen without a good lens; epistoma depressed; antennæ inserted in front, filiform; thorax wider than the head, rounded above, its divisions obscure; pedicle short, and inserted in the base of the abdomen a little in front of the middle; scale small, inclined forwards and wedge-shaped; abdomen large, broad-ovate; head, thorax and abdomen somewhat thickly sprinkled with short grey hairs; legs slender and of medium length.

Male. Length 0.08 inch.—Head a little wider than the thorax; abdomen ovate, small; otherwise like the female. Winged males and females captured in March.

Worker. Length 0.08 inch.—Color: upper surface of head, thorax and abdomen dark brown; under surface of the head, thorax and abdomen, also the pedicle, scale and legs pale yellow; head but little wider than the thorax; mesothorax depressed; abdomen ovate; otherwise like the female.

Hab.—Austin, Texas. Rare. Has cells in the ground near the surface. It is very active.

29. *Formica (Tapinoma) Wichita*, n. sp.

Length 0.10 inch.—Upper surface of head, thorax and abdomen jet-black and shining; legs, under surface of thorax, antennæ and mouth pale yellow; head broad-ovate, round above, at sides and behind, not emarginate; antennæ long, filiform, inserted at base of the clypeus; clypeus sub-curved, smooth; eyes rather large, prominent, sub-circular, lateral, placed about midway of the head; mandibles shorter than the labrum, very small, curved in and acute; under surface of the head not sinuate; prothorax one-third narrower than the head, round at sides, in front, above, and widest in the middle; mesothorax depressed, and a deep strangulation between it and the metathorax; metathorax widened and raised posteriorly, rounded above; pedicle inserted in the base of the abdomen a little in front of the middle; scale large, vertical, wedge-shaped; abdomen broad-ovate, obtuse; legs long; coxæ and trochanters large, a few scattering white hairs on the upper surface of the head and abdomen.

Hab.—Beneath stones near the Wichita River in Northern Texas.

30. *Formica (Hypochira) subspinosa*, n. sp.

Worker. Length 0.18 inch.—Yellowish-red; abdomen reddish-brown, smooth throughout; head sub-cordate, rounded above; occiput slightly emarginate, posterior angles rounded; eyes large, circular, placed a little in front of the middle on the upper surface of the round-

ed sides; antennæ long, clavate; mandibles small, slender, curved inwards, acute; head nearly twice the width of the prothorax, which is rounded in front, on the sides, and largest in the middle; mesothorax small, depressed or slightly strangulated; metathorax raised, with two slight protuberances in front, truncate behind, with two rudimentary spines above on each side, and two below about midway of the sides; pedicel short, scale vertical, wedge-shaped; petiole inserted in the anterior basal part of the abdomen; abdomen ovate.

Hab.—Central Texas. Dwells in the ground beneath stones.

31. **Polyergus Texana**, n. sp.

Female. Length 0.17 inch.—Black, margins of the segments of the abdomen hyaline; head small, sub-quadrate, largest in front of the middle; clypeus large, raised, a depression between its base and the vertex of the head, eyes large, lateral, and placed in front; ocelli placed at top of the occiput which is elevated, its posterior angles rounded, convex beneath occiput and depressed below anteriorly; labrum large and porrect between the mandibles; mandibles small, projecting nearly straight, slightly curved downwards and inwards near the apex, toothless, acute and slender; antennæ inserted at base of the clypeus, filiform, short and not clavate; prothorax wider than the head, raised and rounded above; mesothorax higher than the prothorax; metathorax sub-truncate; pedicel short; scale small, nodose; abdomen oblong-ovate, sub-acute; wings extend beyond the abdomen about 0.08 inch; legs slender; head, thorax and abdomen sprinkled with a few gray hairs.

Found beneath limestone rocks in Buchanan County, Northern Texas.

32. **Ponera Texana**, n. sp.

Worker. Length 0.27 inch.—Dark reddish-brown, somewhat paler beneath; head sub-ovate, rounded above, occiput emarginate, its posterior angles slightly rounded; eyes large, circular, placed on the upper margins of the sides about midway of the head; antennæ inserted near the base of the clypeus with only a narrow ridge between their bases; a prolongation of the carina of the clypeus extend back to near the vertex; antennæ long, filiform, slightly enlarged towards their apical joints; mandibles long, enlarged, and widened in front, curved inwards and downwards, acute; head rounded beneath, with a small longitudinal stria through its centre; prothorax nearly as wide as the head, narrowed in front, widest in the middle, rounded above and at the sides; mesothorax small, somewhat depressed, depression deepest

between it and the metathorax; metathorax oblong, narrower than the prothorax, slightly compressed and enlarged posteriorly, and elevated, sub-truncate; node incrassate, enlarged posteriorly, then truncate; abdomen elongated, acute, with a small strangulation between the first and second segments.

Hab.—Archer County, Northern Texas, beneath red sandstones. Is rather thickly sprinkled with short hairs and is quick in its movements.

33. *Pomera amplinoda*, n. sp.

Length 0.20 inch.—Black or piceous; tibiæ, tarsi, mandibles and last segment of the abdomen piceous or reddish-brown; head quadrangular, somewhat rounded above and at the sides, not emarginate; antennæ inserted at the base of the elypeus, short, clavate; eyes small, circular, lateral, placed in front of the middle; mandibles large, cylindrical near their bases, then widened, triangular, acute, inner margins finely toothed, each alternate one largest; head somewhat flattened below; prothorax narrower than the head, rounded above and compressed at the sides, divisions of the thorax slightly marked, the whole being rounded above, compressed at the sides and narrowed posteriorly; scale incrassate, subquadrate, truncated before and behind, widened posteriorly; abdomen broad-ovate, and but slightly constricted between the first and second segments.

Hab.—Central Texas, beneath rocks. Rare.

34. *Ponera Pennsylvanica*, n. sp.

Length 0.12.—Upper surface of head, thorax and abdomen dark reddish-brown or piceous, mouth, last segment of the abdomen, legs and part of the under surface of the thorax pale yellow; head sub-triangular, rounded above, occiput slightly emarginate; antennæ short, 12-jointed and much enlarged towards their apical joints; eyes none; mandibles large, subtriangular, toothed; under surface of head not sinuate; prothorax a little narrower than the head, rounded above, at sides and in front; mesothorax not depressed, and but little narrower than the prothorax; metathorax rounded at sides, narrower than prothorax, truncate; scale large, subquadrate, its posterior part highest; abdomen oblong, sub-cylindrical, acute, truncate in front, a strangulation between the first and second segments; whole ant nearly or quite destitute of hairs.

Dwells beneath stones in the vicinity of Philadelphia.

35. *Ponera elongata*, n. sp.

Worker.—Length 0.27 inch. Reddish-brown, some darker than others; head sub-triangular, rounded above and slightly so below, posterior part mostly straight when seen from above, with the corners slightly rounded; eyes black, and placed on the upper surface of the sides, a little in front of the middle of the head; mandibles sub-triangular, curved inwards and downwards, sharp-pointed; antennæ inserted in front near the epistoma, long, filiform and somewhat enlarged towards the apical joint; prothorax but little narrower than the head, rounded above and forwards; mesothorax small and strangled; metathorax longer than both pro- and mesothorax, compressed, enlarged and widest in the middle, terminating abruptly posteriorly; scale large, incrassate, subquadrate and oval above, occupying nearly the entire length of the pedicle, subtruncate at each end; a deep strangulation between the first and second segments of the abdomen; abdomen oblong-ovate, acute; legs long and slender; the insect is of slender form, and not active.

Found beneath limestone rocks, near Austin, Texas. I have never seen it at work in the open air. It is not common.

36. *Ponera (Ectatoma) Lincecumii*, n. sp.

Worker.—Length 0.15 inch. Upper surface of head and abdomen sub-piceous, the rest reddish-yellow or pale yellow; head oblong-ovate, rounded above, at sides and behind; eyes very large, prominent, lateral, elliptical, black; antennæ short, clavate and inserted on the sides of the clypeus; mandibles small, curved in and acute; inner surface not sinuate; prothorax one-third narrower than the head, rounded above, compressed at the sides, widest in front; mesothorax small, compressed and not depressed; metathorax a little wider than the mesothorax, sloping gradually to the pedicle, which is long; scale large, sub-nodose; abdomen oblong, sub-acute, a deep strangulation between the first and second segments; legs long, slender; whole ant smooth, shining, and of slender form.

Hab.—On trees in Central Texas. Is rather solitary in its habits, going here and there from branch to branch, seemingly without any definite object.

[TO BE CONTINUED.]